

### Abstract

An operating system is provided for an electric arc welder including a high switching speed inverter power source for creating an arc voltage and arc current between an electrode and a workpiece. This operating system regulating the arc voltage to provide a voltage with a slope by using an error circuit to create an error output and having a first input with a signal representing the set voltage and a second input representing the sum of the actual arc voltage and the actual arc current multiplied by a slope constant. A DSP program reduces the error output by adjusting the voltage output of the inverter power source to change the actual arc voltage. The slope constant is in the range of 0-10%.